CONTENTS

NUMBER 37

E. W. SIMON: Valine Decarboxylation in *Arum* Spadix . . . 1

G. ZWEIG and F. M. ASHTON: The Effect of 2-Chloro-4-ethyl-amino-6-isopropyl-amino-*s*-triazine (Atrazine) on Distribution of ^{14}C-Compounds Following $^{14}CO_2$ Fixation in Excised Kidney Bean Leaves 5

G. G. ZABKA and J. EDELMAN: Pre-illumination as a Factor in the Dark Fixation of Carbon Dioxide by Leaf Disks of *Kalanchoë blossfeldiana* var. Feuer Blute 12

R. F. LYNDON: Nitrogen Metabolism of Detached *Kalanchoë* Leaves in the Dark in Relation to Acidification, Deacidification, and Oxygen Uptake 20

A. W. WHEELER: Growth Activity of the Gibberellins of Dwarf French Bean, Potato, and Lettuce 36

N. G. BALL: The Effects of Externally Applied 3-indolylacetic Acid on Phototropic Induction and Response in the Coleoptile of *Avena* 45

S. M. SIRCAR and PROTIMA DATTA RAY: Studies on the Physiology of Rice. XV 61

E. H. ROBERTS: Dormancy in Rice Seed. III 75

K. P. BARLEY: The Effects of Mechanical Stress on the Growth of Roots 95

M. C. PROBINE and R. D. PRESTON: Cell Growth and the Structure and Mechanical Properties of the Wall in Internodal Cells of *Nitella opaca*. II 111

J. E. JACKSON and P. E. WEATHERLEY: The Effect of Hydrostatic Pressure Gradients on the Movement of Potassium across the Root Cortex 128

G. P. HILL: Exudation from Aphid Stylets during the Period from Dormancy to Bud break in *Tilia americana* L. 144

R. THAINE: A Translocation Hypothesis based on the Structure of Plant Cytoplasm 152

I. MANTON: Observations on Stellate Vacuoles in the Meristem of *Anthoceros* 161

NUMBER 38

L. A. GRIFFITHS: On the Co-occurrence of Coumarin, *o*-Coumaric Acid, and Melilotic Acid in *Gliricidia sepium* and *Dipteryx odorata* 169

CONTENTS

NUMBER 37

E. W. SIMON: Valine Decarboxylation in *Arum* Spadix . . . 1

G. ZWEIG and F. M. ASHTON: The Effect of 2-Chloro-4-ethyl-amino-6-isopropyl-amino-*s*-triazine (Atrazine) on Distribution of ^{14}C-Compounds Following $^{14}CO_2$ Fixation in Excised Kidney Bean Leaves 5

G. G. ZABKA and J. EDELMAN: Pre-illumination as a Factor in the Dark Fixation of Carbon Dioxide by Leaf Disks of *Kalanchoë blossfeldiana* var. Feuer Blute 12

R. F. LYNDON: Nitrogen Metabolism of Detached *Kalanchoë* Leaves in the Dark in Relation to Acidification, Deacidification, and Oxygen Uptake 20

A. W. WHEELER: Growth Activity of the Gibberellins of Dwarf French Bean, Potato, and Lettuce 36

N. G. BALL: The Effects of Externally Applied 3-indolylacetic Acid on Phototropic Induction and Response in the Coleoptile of *Avena* 45

S. M. SIRCAR and PROTIMA DATTA RAY: Studies on the Physiology of Rice. XV 61

E. H. ROBERTS: Dormancy in Rice Seed. III 75

K. P. BARLEY: The Effects of Mechanical Stress on the Growth of Roots 95

M. C. PROBINE and R. D. PRESTON: Cell Growth and the Structure and Mechanical Properties of the Wall in Internodal Cells of *Nitella opaca*. II 111

J. E. JACKSON and P. E. WEATHERLEY: The Effect of Hydrostatic Pressure Gradients on the Movement of Potassium across the Root Cortex 128

G. P. HILL: Exudation from Aphid Stylets during the Period from Dormancy to Bud break in *Tilia americana* L. 144

R. THAINE: A Translocation Hypothesis based on the Structure of Plant Cytoplasm 152

I. MANTON: Observations on Stellate Vacuoles in the Meristem of *Anthoceros* 161

NUMBER 38

L. A. GRIFFITHS: On the Co-occurrence of Coumarin, *o*-Coumaric Acid, and Melilotic Acid in *Gliricidia sepium* and *Dipteryx odorata* 169

G. G. PRITCHARD, WENDY J. GRIFFIN, and C. P. WHITTINGHAM: The Effect of Carbon Dioxide Concentration, Light Intensity, and *Iso*nicotinyl Hydrazide on the Photosynthetic Production of Glycollic Acid by *Chlorella* 176

U. HEBER and E. TYSZKIEWICZ: The Rate of Photosynthesis in Isolated Chloroplasts 185

A. M. MAYER and L. W. MAPSON: Esterification of Inorganic Phosphate by Glycolysis in Extracts from Normal and Pentan-1-ol Treated pea Cotyledons 201

I. D. J. PHILLIPS: Some Interactions of Gibberellic Acid with Naringenin (5, 7, 4′-trihydroxy flavanone) in the Control of Dormancy and Growth in Plants 213

J. E. CLARK and O. V. S. HEATH: Studies in the Physiology of the Onion Plant 227

W. D. P. STEWART: A Quantitative Study of Fixation and Transfer of Nitrogen in *Alnus* 250

H. J. M. BOWEN, P. A. CAWSE, and J. THICK: The Distribution of some Inorganic Elements in Plant Tissue Extracts . . 257

R. G. THOMAS: Promotion and Inhibition of Inflorescence Growth by Long Days in Short-Day Plants 268

HANS MEIDNER: The Minimum Intercellular-space CO_2-Concentration (Γ) of Maize Leaves and its Influence on Stomatal Movements 284

D. C. SPANNER and J. N. PREBBLE: The Movement of Tracers along the Petiole of *Nymphoides peltatum*. I 294

J. N. CLATWORTHY and J. L. HARPER: The Comparative Biology of Closely Related Species Living in the Same Area. V . . 307

I. MANTON: Observations on Plastid Development in the Meristem of *Anthoceros* 325

NUMBER 39

B. JACOBY and J. F. SUTCLIFFE: Effects of Chloramphenicol on the Uptake and Incorporation of Amino-acids by Carrot Root Tissue 335

J. A. SARGENT and G. E. BLACKMAN: Studies on Foliar Penetration. I 348

D. A. THURMAN and H. E. STREET: Metabolism of Some Indole Auxins in Excised Tomato Roots 369

L. R. G. VALADON, A. MYERS, and J. G. MANNERS: The Behaviour of Nucleic Acids and Other Constituents in *Protomyces inundatus* Dangeard 378

M. M. YEOMAN: The Effects of Ribonuclease on the Growth of Pea Roots 390

D. A. BARBER, M. EBERT, and N. T. S. EVANS: The Movement of ^{15}O through Barley and Rice Plants 397

J. E. JACKSON and P. E. WEATHERLEY: The Effect of Hydrostatic Pressure Gradients on the Movement of Sodium and Calcium across the Root Cortex 404

D. BALINSKY and D. D. DAVIES: Aromatic Biosynthesis in Higher Plants. IV 414

R. W. SNAYDON and A. D. BRADSHAW: Differences between Natural Populations of *Trifolium repens* L. in Response to Mineral Nutrients. I 422

I. R. MACDONALD and G. G. LATIES: Oxygen Electrode Measurements of Potato Slice Respiration at 0° C. 435

L. HOFFMAN and I. MANTON: Observations on the Fine Structure of the Zoospore of *Oedogonium cardiacum* with Special Reference to the Flagellar Apparatus 443

INDEX TO VOLUME 13

ASHTON, F. M., *see* ZWEIG, G.

BALINSKY, D., and DAVIES, D. D. Aromatic Biosynthesis in Higher Plants . 414

BALL, N. G. The Effects of Externally Applied 3-indolylacetic Acid on Phototropic Induction and Response in the Coleoptile of *Avena* 45

BARBER, D. A., EBERT, M., and EVANS, N. T. S. The Movement of ^{15}O through Barley and Rice Plants 397

BARLEY, K. P. The Effects of Mechanical Stress on the Growth of Roots . 95

BLACKMAN, G. E., *see* SARGENT, J. A.

BOWEN, H. J. M., CAWSE, P. A., and THICK, J. The Distribution of some Inorganic Elements in Plant Tissue Extracts 257

BRADSHAW, A. D., *see* SNAYDON, R. W.

CAWSE, P. A., *see* BOWEN, H. J. M.

CLARK, J. E., and HEATH, O. V. S. Studies in the Physiology of the Onion Plant 227

CLATWORTHY, J. N., and HARPER, J. L. The Comparative Biology of Closely Related Species Living in the Same Area. V 307

DAVIES, D. D., *see* BALINSKY, D.

EBERT, M., *see* BARBER, D. A.

EDELMAN, J., *see* ZABKA, G. G.

EVANS, N. T. S., *see* BARBER, D. A.

GRIFFIN, W. J., *see* PRITCHARD, G. G.

GRIFFITHS, L. A. On the Co-occurrence of Coumarin, *o*-Coumaric Acid, and Melilotic Acid in *Gliricidia sepium* and *Dipteryx odorata* 169

HARPER, J. L., *see* CLATWORTHY, J. N.

HEATH, O. V. S., *see* CLARKE, J. E.

HEBER, U., and TYSZKIEWICZE, E. The Rate of Photosynthesis in Isolated Chloroplasts 185

HILL, G. P. Exudation from Aphid Stylets during the period from Dormancy to Bud break in *Tilia americana* L. 144

HOFFMAN, L., and MANTON, I. Observations on the Fine Structure of the Zoospore of *Oedogonium cardiacum* with Special Reference to the Flagellar Apparatus 443

JACKSON, J. E., and WEATHERLEY, P. E. The Effect of Hydrostatic Pressure Gradients on the Movement of Potassium across the Root Cortex . . 128

JACKSON, J. E., and WEATHERLEY, P. E. The Effect of Hydrostatic Pressure Gradients on the Movement of Sodium and Calcium across the Root Cortex . 404

JACOBY, B., and SUTCLIFFE, J. F. Effects of Chloramphenicol on the Uptake and Incorporation of Amino-acids by Carrot Root Tissue 335

LATIES, G. G., *see* MACDONALD, I. R.

LYNDON, R. F. Nitrogen-metabolism of Detached *Kalanchoë* Leaves in the Dark in Relation to Acidification, Deacidification, and Oxygen Uptake . . 20

MACDONALD, I. R., and LATIES, G. G. Oxygen Electrode Measurements of Potato Slice Respiration at 0° C. 435

MANNERS, J. G., *see* VALADON, L. R. G.

MANTON, I. Observations on Stellate Vacuoles in the Meristem of *Anthoceros* . 161

MANTON, I. Observations on Plastid Development in the Meristem of *Anthoceros* 325

MANTON, I., *see* HOFFMAN, L.

MAPSON, L. W., *see* MAYER, A. M.

MAYER, A. M., and MAPSON, L. W. Esterification of Inorganic Phosphate by Glycolysis in Extracts from Normal and Pentan-1-ol Treated pea Cotyledons 201

MEIDNER, H. The Minimum Intercellular-space CO_2-Concentration (Γ) of Maize Leaves and its Influence on Stomatal Movements 284
MYERS, A., *see* VALADON, L. R. G.
PHILLIPS, I. D. J. Some Interactions of Gibberellic Acid with Naringenin (5, 7, 4′-trihydroxy flavanone) in the Control of Dormancy and Growth in Plants . 213
PREBBLE, J. N., *see* SPANNER, D. C.
PRESTON, R. D., *see* PROBINE, M. C.
PRITCHARD, G. G., GRIFFIN, W. J., and WHITTINGHAM, C. P. The Effect of Carbon Dioxide Concentration, Light Intensity, and *Iso*nicotinyl Hydrazide on the Photosynthetic Production of Glycollic Acid by *Chlorella* 176
PROBINE, M. C., and PRESTON, R. D. Cell Growth and the Structure and Mechanical Properties of the Wall in Internodal Cells of *Nitella opaca*. II . . 111
RAY, PROTIMA DATTA, *see* SIRCAR, S. M.
ROBERTS, E. H. Dormancy in Rice Seed. III 75
SARGENT, J. A., and BLACKMAN, G. E. Studies in Foliar Penetration. I . . 348
SIMON, E. W. Valine Decarboxylation in *Arum* Spadix 1
SIRCAR, S. M., and RAY, PROTIMA DATTA. Studies on the Physiology of Rice. XV 61
SNAYDON, R. W., and BRADSHAW, A. D. Differences between Natural Populations of *Trifolium repens* L. in Response to Mineral Nutrients. I 422
SPANNER, D. C., and PREBBLE, J. N. The Movement of Tracers along the Petiole of *Nymphoides peltatum*. I 294
STEWART, W. D. P. A Quantitative Study of Fixation and Transfer of Nitrogen in *Alnus* 250
STREET, H. E., *see* THURMAN, D. A.
SUTCLIFFE, J. F., *see* JACOBY, B.
THAINE, R. A. Translocation Hypothesis based on the Structure of Plant Cytoplasm 152
THICK, J., *see* BOWEN, H. J. M.
THOMAS, R. G. Promotion and Inhibition of Inflorescence Growth by Long Days in Short-Day Plants 268
THURMAN, D. A., and STREET, H. E. Metabolism of Some Indole Auxins in Excised Tomato Roots 369
TYSZKIEWICZ, E., *see* HEBER, U.
VALADON, L. R. G., MYERS, A., and MANNERS, J. G. The Behaviour of Nucleic Acids and Other Constituents in *Protomyces inundatus* Dangeard . . 378
WEATHERLEY, P. E., *see* JACKSON, J. E.
WHEELER, A. W. Growth Activity of the Gibberellins of Dwarf French Bean, Potato and Lettuce 36
WHITTINGHAM, C. P., *see* PRITCHARD, G. G.
YEOMAN, M. M. The Effects of Ribonuclease on the Growth of Pea Roots . 390
ZABKA, G. G., and EDELMAN, J. Pre-illumination as a Factor in the Dark Fixation of Carbon Dioxide by Leaf Disks of *Kalanchoë blossfeldiana* var. Feuer Blute . 12
ZWEIG, G., and ASHTON, F. M. The Effect of 2-Chloro-4-ethylamino-6-isopropyl-amino-s-triazine (Atrazine) on Distribution of ^{14}C-Compounds Following $^{14}CO_2$ Fixation in Excised Kidney Bean Leaves 5